

COUNTRY ANALYSIS BRIEFS

Saudi Arabia

Last Updated: November 2009

Saudi Arabia is the largest oil producer of the Organization of the Petroleum Exporting Countries (OPEC). With approximately one-fifth of the world's proven oil reserves and some of the lowest production costs, Saudi Arabia is expected to remain the world's largest net oil exporter in the near and long-term.

Background

Overview

Saudi Arabia is the world's largest producer and exporter of total petroleum liquids, and the world's second largest crude oil producer behind Russia. Saudi Arabia's economy remains heavily dependent on oil and petroleum-related industries, including petrochemicals and petroleum refining. Oil export revenues have accounted for around 90 percent of total Saudi export earnings and state revenues and above 40 percent of the country's gross domestic product (GDP).

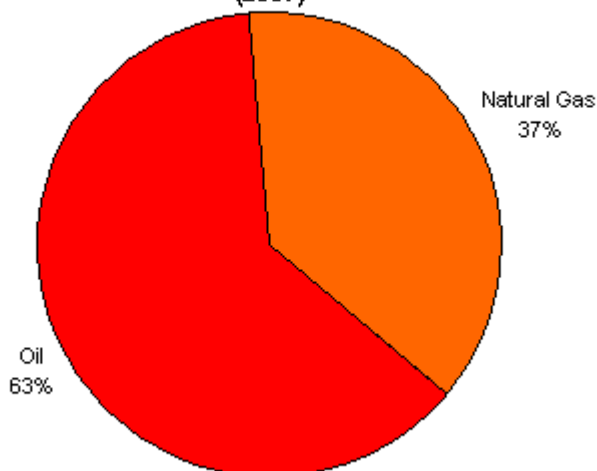
Saudi Arabia's hydrocarbon sector operations are dominated by the state-owned oil company, Saudi Aramco. Saudi Aramco is the world's largest oil company in terms of proven reserves and production of hydrocarbons. In addition, Saudi Arabia's [Ministry of Petroleum and Mineral Resources](#) and the Supreme Council for Petroleum and Minerals have oversight of the sector and Saudi Aramco directly. The Supreme Council, which is comprised of members of the royal family, industry leaders and government ministers, is responsible for petroleum and natural gas policy-making, including contract review, as well as Saudi Aramco's strategic planning. The Ministry is responsible for national planning in the area of energy and minerals, including petrochemicals.



Energy Consumption

Saudi Arabia is the largest consumer of petroleum in the Middle East, particularly in the area of transportation fuels. Domestic consumption growth has been spurred by the economic boom due to historically high oil prices and large fuel subsidies. In 2006, Saudi Arabia was the 15th largest consumer of total primary energy, of which 60 percent was petroleum-based. The remainder was made up of natural gas, the growth of which has been limited by supply constraints.

**Total Energy Consumption in Saudi Arabia, by Type
(2007)**



Source: EIA International Energy Annual 2007

Oil

Saudi Arabia has one-fifth of the world's proven oil reserves, and maintains the world's largest oil production capacity.

Reserves

According to the Oil and Gas Journal, Saudi Arabia contains approximately 264 billion barrels of proven oil reserves (including 2.5 billion barrels in the Saudi-Kuwaiti shared "Neutral" Zone), amounting to around one-fifth of proven, conventional world oil reserves. Although Saudi Arabia has around 100 major oil and gas fields (and more than 1,500 wells), over half of its oil reserves are contained in only eight fields, including the giant 1,260-square mile Ghawar field (the world's largest oil field, with estimated remaining reserves of 70 billion barrels). The Ghawar field alone has more proven oil reserves than all but six other countries.

Consumption

Saudi Arabia is the largest oil consuming nation in the Middle East. In 2008, Saudi Arabia consumed approximately 2.4 million bbl/d of oil, up 50 percent since 2000, due to strong economic and industrial growth and subsidized prices. According to independent analysis quoted in industry reports, demand is expected to rise by eight to 10 percent through 2010, mostly in the area of electricity and NGLs for petrochemical production. Saudi Arabia also does direct burn of crude oil for power generation during summer months.

Production

Saudi Arabia maintains the world's largest crude oil production capacity, estimated by U.S. Energy Information Administration (EIA) to be around 11 million bbl/d, at mid-year 2009. In 2005, Saudi Arabia's Ministry of Petroleum and Mineral Resources announced the details of a plan to increase this capacity to 12.5 million bbl/d by 2009, the detail of which are outlined below, although the oil price collapse the end of 2008 led to delays in net capacity additions.

For 2008, the EIA estimates that Saudi Arabia produced on average 10.8 million bbl/d of total oil, comprising crude oil, lease condensate, natural gas liquids, and other liquids (including half of the Saudi-Kuwaiti Neutral Zone's 600,000 bbl/d). In addition to 9.3 million bbl/d of crude oil, Saudi Arabia produced around 1.5 million bbl/d of natural gas liquids (NGLs) and other liquids, which are not subject to OPEC quotas. Saudi Arabia, a leading world producer of NGLs, has experienced a rise in demand for NGLs from developing countries, including India (the leading export destination), where it is used for cooking and transportation.

Saudi's main producing fields in 2008 included:

- Ghawar (onshore): Ghawar alone accounts for about half of Saudi Arabia's total oil production capacity, and is the world's largest oil field. It produces more than 5 million bbl/d of 34o API Arabian Light crude. Ghawar also produces more than every other country except Russia and the United States.

- Safaniya (offshore): The third largest oil field in the world in terms of production in 2007, it produced 1.4 million bbl/d of Arab Heavy Crude in 2007, but production declined in 2008 with the drop in global oil demand.
- Khurais (onshore): The largest oil field brought on globally in 2009, it has a capacity of 1.2 million bbl/d of Arab Light crude.
- Qatif (onshore): Capacity 0.5 million bbl/d of Arab Medium crude.
- Shaybah (onshore): Capacity 0.5 million bbl/d of Arab Extra Light crude.
- Zuluf (offshore): Produces approximately 450,000 bbl/d of Arab Medium crude.
- Abqaiq (onshore): Produces approximately 400,000 bbl/d Arab Extra Light crude.

Map of Oil and Gas Fields in Saudi Arabia (2005)

[Click the Map to Enlarge](#)



Source: Saudi Aramco

Saudi Crude Streams

Saudi Arabia produces a range of crude oils, from heavy to super light. Of Saudi Arabia's total oil production capacity, about 65 to 70 percent is considered light gravity, with about 25 percent considered medium gravity, and the rest heavy. The country is moving to reduce the share of the latter two grades. Lighter grades generally are produced onshore, while medium and heavy grades come mainly from offshore fields. Most Saudi oil production, except for "extra light" and "super light," is considered "sour," containing relatively high levels of sulfur.

Upstream Capacity Developments through 2011

Saudi Arabia's long-term goal is to further develop its lighter crude. Although the Ministry has only

committed to increasing capacity to 12.5 million bbl/d, potential increases to 15 million bbl/d capacity (post-2011) were discussed at a summit in Jeddah in June 2008.

Saudi Aramco continues aggressive plans to increase crude oil production capacity despite some recent delays. Key projects are:

- Khurais: 1.2 million bbl/d Arab Light project came online mid-2009. In terms of capacity, it is the 4th largest oilfield in the world.
- Nu'ayyim: 0.1 million bbl/d Arab Super Light project came online mid-2009.
- Shaybah expansion: Expansion from 0.5 million bbl/d to 0.75 million bbl/d of Arab Extra Light expected to be brought online imminently, although it was originally to be brought online at end-2008.
- Khursaniyah: Work on the 0.5 million bbl/d Arab Light project has yet to be completed.
- Neutral Zone Expansion: Originally expected to see a 0.15 million bbl/d expansion by 2011.
- Manifya: The 0.9 million bbl/d Arab Heavy project has been delayed until at least 2013.

Challenges to the Upstream Development Program

One challenge the Saudis face in achieving their strategic vision to add production capacity is that their existing fields experience 6 to 8 percent annual "decline rates" on average (as reported by *Platts Oilgram in 2006*) in existing fields, meaning that the country needs around 700,000 bbl/d in additional capacity each year just to compensate for natural decline. Decline estimates for Saudi Arabia vary widely, however. The Ministry of Petroleum maintains that decline rates in Saudi Arabia are around 2 percent annually. Saudi Aramco has stated that it will also conduct additional drilling at existing fields in order to help compensate for the natural declines from the mature fields.

Saudi Aramco, Saudi Arabia's national oil company, estimates that the average total depletion for Saudi oil fields is 29 percent, with Abqaiq (the oldest) 74 percent depleted, the giant Ghawar field having produced 48 percent of its proven reserves and the younger Shaybah, just 5 percent depleted. Aramco also reports that Saudi oil reserves are likely underestimated, not overestimated, although some analysts have disputed Aramco's optimistic assessments of Saudi oil reserves and future production. Minister Al-Naimi has refuted these contrarian arguments, and stated that Saudi Arabia could add as much as 200 billion barrels of oil to proven reserves after an extended period of investment and exploration.

Saudi-Kuwaiti Neutral Zone; Bahrain

The Saudi-Kuwait Divided Zone or the "Neutral Zone", 2230 square miles between the borders of Saudi Arabia and Kuwait that was left undefined in 1922, contains an estimated 5 billion barrels of proven oil reserves, shared between the two countries, from which approximately 600,000 bbl/d is produced. (See map)

Map of the Saudi – Kuwaiti Neutral Zone



Source: EIA, CIA World Factbook

In February 2008, The Kuwait Gulf Oil Company announced that the two countries were set to increase capacity in the Divided Zone to about 630,000 bbl/d by 2009. The increases are expected to come from the offshore area where steam injection technology will be employed.

Within the Neutral Zone, Japan's Arabian Oil Co. (AOC) traditionally operated the two offshore fields of Khafji and Hout with 300,000 bbl/d in production, but in February 2000, AOC lost the concession. Efforts to negotiate an extension of the operating contract with Saudi authorities failed when Japan refused to commit to investment in development projects desired by the Saudis, and Aramco took over operation of the former AOC fields (in January 2003, AOC reached an agreement with Kuwait on the right to purchase at least 100,000 bbl/d of crude for the next 20 years from Khafji). ChevronTexaco operates three onshore fields (Wafra, Humma, and South Umm Gudair) in the Divided Zone under a 60-year license that was renewed in July 2008. These fields have 2 billion barrels of proven reserves and total production of about 260,000 bbl/d of Arab Heavy oil. Finally, Bahrain and Saudi Arabia share the 300,000 bbl/d production of the Abu Safah offshore field.

Processing

Saudi Aramco operates the world's largest oil processing facility and crude stabilization plant in the world at Abqaiq, in Eastern Saudi Arabia, with a crude processing capacity of more than 7 million bbl/d. The plant processes the majority of Arabian Extra Light and Arabian Light crude oils, as well as NGLs. The facility's infrastructure includes pumping stations, Gas Oil Separation Plants (GOSPs), hydro-desulphurization units, and an extensive network of pipelines that connects the plant to the ports of Ras al-Juaymah, Ras Tanura and Yanbu (for NGLs). Nearly two-thirds of Saudi crude is processed at Abqaiq before export or delivery to refineries. The facility was the target of a terrorist attack in 2006 (see Security Issues Section).

Refining/Petrochemicals

According to *Oil and Gas Journal*, Saudi Arabia has seven domestic refineries, with a combined crude throughput capacity of around 2.1 million bbl/d (of which Aramco's share is approximately 1.5 million bbl/d). The Saudi Aramco development plan calls for a \$70-billion investment in the sector, increasing domestic refining capacity to 3 million bbl/d and international holdings by at least 1-2 million bbl/d by 2011, particularly in an effort to meet requirements of the fast-growing Asian market. Several of these new refineries will be integrated with large petrochemical complexes, in what has been described as the creation of petrochemical cities.

- Saudi Aramco's 400,000 bbl/d joint venture export refinery with Total in Jubail, which is expected to be fully operational by end-2013. It will run mainly Arab Heavy crude, and maximize production of diesel and jet fuel.
- Saudi Aramco and ConocoPhillips 400,000 bbl/d Yanbu joint venture refinery project, scheduled for startup at end-2014.
- Saudi Aramco is moving ahead with plans for a new \$25 billion refinery/petrochemical complex at Ras Tanura, with a refining capacity of 400,000 bbl/d.
- Saudi Aramco is moving ahead with its first venture into the petrochemical business, a \$10 billion expansion at its integrated PETRO-Rabigh Refinery and petrochemical joint venture with Sumitomo.

Saudi Arabia has approximately 2 million bbl/d interest in refining overseas in five main facilities in the United States, China, South Korea, Japan and the Philippines.

In the United States, Saudi Aramco and partner Royal Dutch/Shell own three Motiva joint-venture refineries in Louisiana and Texas. The three facilities currently have a total capacity of around 740,000, or approximately 5 percent of the U.S. refining market. Saudi Aramco owns 50 percent of Motiva through a subsidiary, Saudi Refining. Plans to more than double the capacity at the Port Arthur facility will make it the largest refinery in the United States.

Security Issues

The Saudi petroleum pipeline and export network (and energy sector in general) was a terrorism target. In February 2006, Saudi security prevented an attempted suicide bomb attack at the Abqaiq petroleum processing facility, after Al-Qaeda leadership called for renewed attacks against the country's economic backbone. Nevertheless, energy infrastructure remains well-protected. Following the 2006 incident, the government increased the National Guard and military security force to approximately 20,000, in addition to the 5,000 guards employed directly by Aramco. In addition to direct security, Saudi Arabia is known to ensure export security by maintaining "redundancy" (i.e., multiple options for transportation and export) in its oil system, in part as a form of indirect security against any one facility being disabled.

Oil Exports and Shipping

Exports

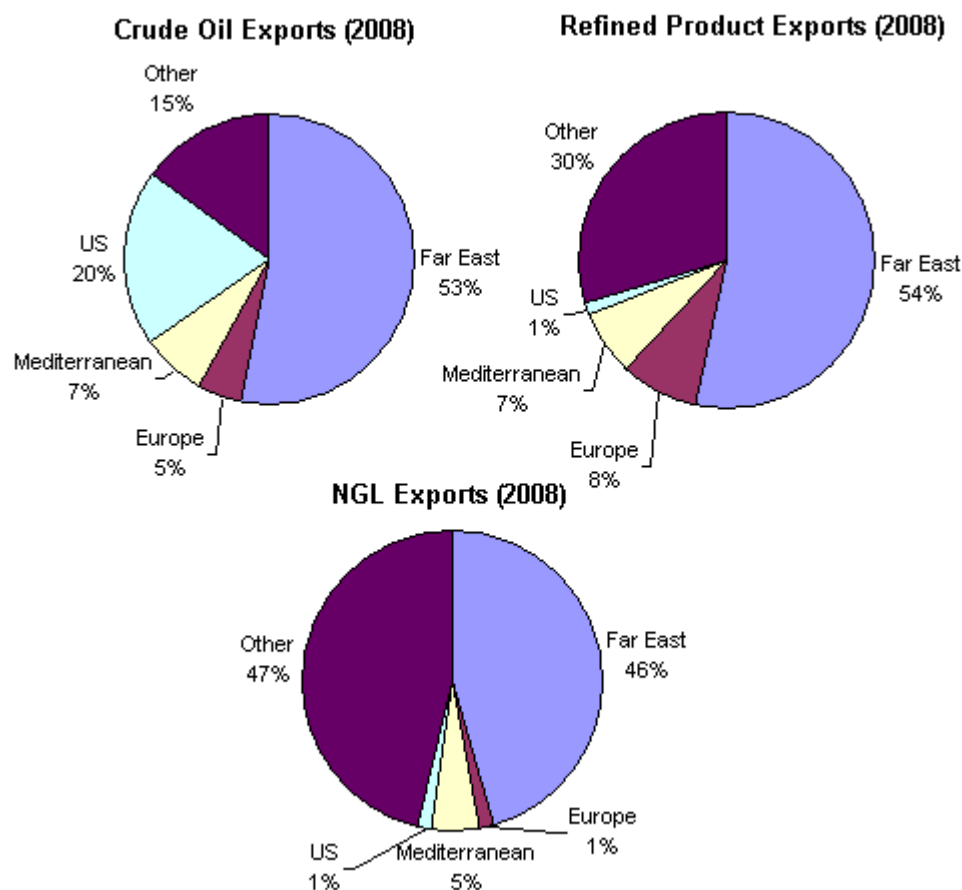
Saudi Arabia exported an estimated 8.4 million bbl/d of petroleum liquids in 2008, the majority of which was crude oil. Asia, including Japan, South Korea, China, and India, now receives an estimated 50 percent of Saudi Arabia's crude oil exports, as well as the majority of its refined petroleum product and NLG exports. Japan remains the single largest importer of Saudi crude in Asia. In order to free up petroleum for export, Saudi Arabia continues to explore for natural gas resources to meet domestic consumption needs.

In 2008, Saudi Arabia exported an average of 1.53 million bbl/d of petroleum liquids to the United States, accounting for 12 percent of total U.S. petroleum imports. For this time period, Saudi Arabia ranked second after Canada as a petroleum exporter to the United States. In 2008, Japan imported an estimated 1.3 million bbl/d on average. In the same year, South Korea's imports from Saudi increased by about 90,000 bbl/d to approximately 875,000 bbl/d.

Beginning in January 2010, Saudi Aramco will change the benchmark that it uses for pricing crude oil exports to the United States. Saudi Aramco had used the West Texas Intermediate (WTI) crude oil price since 1994, but will switch to the Argus Sour Crude Index (ASCI), in part because the ASCI is viewed as being more representative of the U.S. Gulf Coast sour crude market.

The following series of graphs break out the percentage of exports by destination for the three main categories of oil exports:

Saudi Arabia is the world's largest (net) oil exporter and is a key oil supplier to the United States, Europe and Asia.



Source: Saudi Aramco, 2008 Annual Review

Major Ports

Saudi Arabia has three primary oil export terminals:

- The Ras Tanura complex has approximately 6 million bbl/d capacity, and the world's largest offshore oil loading facility. It includes the 2.5-million bbl/d port at Ras Tanura. More than 75 percent of exports are loaded at the Ras Tanura Facility.
- The 3 to 3.6-million bbl/d Ras al-Ju'aymah facility on the Persian Gulf.
- The Yanbu' terminal on the Red Sea, from which most of the remaining 25 percent is exported, has loading capacity of approximately 4.5 million bbl/d crude and 2 million bbl/d for NGL and products. The facility is reportedly not used to full capacity.

These and a dozen other smaller terminals throughout the country, appear capable of exporting up to 14-15 million bbl/d of crude and refined products, 3-4 million bbl/d higher than Saudi Arabia's current crude oil production capacity.

Major Domestic Petroleum Pipelines

Saudi Aramco operates more than 9,000 miles of petroleum pipelines throughout the country, including two major pipelines:

- The 745-mile, 5 million-bbl/d East-West Crude Oil Pipeline (Petroline), has been operated by Saudi Aramco since 1984 (when it took over from Mobil), and is used mainly to transport Arabian Light and Super Light from Abqaiq refineries in the Eastern Province to Red Sea terminals (Yanbu) for export to European markets. Reportedly, the Saudis expanded the Petroline in part to maintain Yanbu' as a strategic option to Gulf port facilities in the event that exports were blocked

from passing through the [Straits of Hormuz](#) in the Persian Gulf. The Petroline is utilized at less than half capacity, as shipments from Yanbu' add up to five days roundtrip travel time for tankers through the Bab al-Mandab strait to major customers in Asia.

- Running parallel to the Petroline is the 290,000-bbl/d Abqaiq-Yanbu' natural gas liquids (NGL) pipeline, which serves Yanbu's petrochemical plants.

Also built in the 1980s was a 236-mile multi-products line between Dhahran in the Eastern Province and Riyadh and a 220-mile smaller multi-product line between Riyadh and Qassim to the north.

International Petroleum Pipelines

Saudi Aramco does not operate any major functioning international pipelines. The Trans-Arabian Pipeline (Tapline) from Qaisumah to Sidon, Lebanon, completed in 1974, has been mothballed, in part, since 1984 (the portion to Jordan was closed in 1990, through there has been talk of reopening this portion). Also, a 1.65 million-bbl/d, 48-inch Iraqi Pipeline across Saudi Arabia (IPSA), which runs parallel to the Petroline from pump station #3 (there are 11 pumping stations along the Petroline) to the port of Mu'ajiz, just south of Yanbu, was built in 1989, but closed indefinitely following the August 1990 Iraqi invasion of Kuwait. In June 2001, Saudi Arabia seized ownership of IPSA. Theoretically, IPSA could be used for Saudi oil transport to the Red Sea, although the Saudis have reported that the pipeline has been converted to carry gas as part of the Master Gas System.

The only functioning international crude pipeline system is a 60-year old complex of four small submarine pipelines carrying Arabian Light crude from the Abu Saafra and Dammam fields to Bahrain. The pipelines range from 207,000 to 250,000 bbl/d capacity. Reportedly, this aging pipeline will be decommissioned after the construction of the "New Arabia" pipeline, a 71-mile, 350,000-450,000-bbl/d capacity feed running between Abqaiq and Bahrain's refinery at Sitra.

Click [HERE](#) for a map of major pipeline networks in the Middle East.

Shipping

Saudi Aramco's shipping subsidiary Vela International Marine Ltd. operates the sixth largest fleet of supertankers in the world, including 24 VLCCs (very large crude carriers), one Aframax class vessel, and four product tankers. In addition to tankers, Aramco owns or leases oil storage facilities around the world, in places like Rotterdam, Sidi Kerir (the Sumed pipeline terminal on Egypt's Mediterranean coast), South Korea, the Philippines, and the Caribbean.

The National Shipping Company of Saudi Arabia (NSCSA) is a public company, although the Public Investment Fund (PIF) of the Saudi government holds 28 percent, while the remaining 72 percent is publicly traded. The NSCSA fleet has a total of eight VLCCs, with plans to increase the fleet to 17 VLCCs.

Natural Gas

Reserves

According to the *Oil and Gas Journal*, Saudi Arabia has proven natural gas reserves estimated at 258 trillion cubic feet (Tcf), fourth largest in the world behind Russia, Iran, and Qatar. Over 5 Tcf was added in 2008, and over the last decade and a half, Saudi Aramco has added about 75 Tcf of non-associated reserves.

However, the majority of the gas fields in Saudi Arabia are "associated" with petroleum deposits, or found in the same fields as crude oil, and plans to increase production of this type of gas remain linked to an increase in oil production. The majority of new natural gas discovered in the 1990s has been associated in light crude oil, especially in the Najd region south of Riyadh. About 57 percent of Saudi Arabia's proven natural gas reserves consist of associated gas at the giant onshore Ghawar field and the offshore Safaniya and Zuluf fields. The Ghawar oil field alone accounts for approximately one-third of the country's proven natural gas reserves.

Production and Consumption

Rapid reserve development is necessary for Saudi Arabia's plans to fuel the growth of the petrochemical sector, as well as for power generation and for water desalination. According to Saudi Aramco forecasts, natural gas demand in the kingdom is expected to more than double to 14.5 billion cubic feet per day (Bcf/d) by 2030, up from an estimated 7.1 Bcf/d in 2007. In order to

For more than a decade, Saudi Aramco, the world's ninth largest natural gas producer, has aggressively explored for additional reserves to meet growing demand, although success has been limited.

free up petroleum for export, all current and future gas supplies (except natural gas liquids) reportedly remain earmarked for use in domestic industrial consumption and desalination.

However, natural gas production (estimated at 2.7 Tcf in 2007 remains limited, as soaring costs of production, exploration, processing and distribution of gas have squeezed supply, while an estimated 13 to 14 percent of total production is lost to venting, flaring, reinjection and natural processes according to OPEC and other sources. Saudi Arabia has no net imports or exports of natural gas. According to Saudi Aramco, only 15 percent of Saudi Arabia has been "adequately explored for gas".

Upstream Developments and Strategy

Although most of its natural gas reserves are from associated gas, Saudi Arabia is not likely to boost its gas production from these reserves because of OPEC crude oil production restraints. To meet growing domestic needs for additional production, the Petroleum Ministry and Saudi Aramco announced a \$9-billion strategy to add 50 Tcf of non-associated reserves by 2016 through new discoveries (and potentially another 50 Tcf of associated reserves). According to Saudi Aramco, exploration and development will also commence in non-producing areas such as the Red Sea, northern and western Saudi Arabia, and the Nafud basin, north of Riyadh.

Upstream Developments by Saudi Aramco

Saudi Aramco has focused on offshore fields in the Persian Gulf in its current 5-year plan to expand its natural gas production. Three non-associated gas fields have been targeted:

- The 1.8 Bcf/d Karan gas field, discovered in April 2006, is Saudi Arabia's first offshore non-associated gas development. Karan is expected to come online in 2011-2012.
- The 1.0 Bcf/d Arabiyah gas field, expected online within 5 year.
- The 0.8 Bcf/d Hasbah gas field, expected online within 5 years.

The Arabiyah and Hasbah fields are believed to contain high- sulfur natural gas that will be sent to be processed at the Kursaniyah gas hub. These high sulfur levels, as well as their offshore location, will make this gas relatively expensive to develop.

In response to these new upstream developments, a major expansion of natural gas and natural gas liquids processing capacity from 9.3 Bcf/d to 12.5 Bcf/d is underway at Khursaniya, Hawiya, Ju'aymah, Yanbu, and Khurais to process increases in production.

Upstream Activities in Contested Regions

Another large non-associated offshore natural gas field, Dorra (Durra), is located offshore near Khafji oil field in the Saudi-Kuwaiti Neutral Zone. Plans to develop Dorra have been controversial since the late 1960s, however, because 70 percent is also claimed by Iran (called Arash). In addition, the maritime border between Kuwait and Iran remains un-demarcated. Saudi Arabia reached an agreement with Kuwait in July 2000 to share Dorra output equally, although the Kuwaitis are reportedly trying to purchase the Saudi share. According to Saudi Aramco, the field is estimated to contain non-associated gas reserves of between 35 and 60 Tcf of natural gas, and is under seismic study. The Kuwaiti Ministry of Oil has reported that the goal is to produce initially 600 MMcf/d from Dorra. Kuwait and Iran have intermittently discussed jointly developing the field, although production plans remain undisclosed.

Upstream Activities in the Empty Quarter (Rub Al Khali)

The Saudi domestic natural gas market, traditionally the sole domain of Saudi Aramco, is slowly being opened to private investment both in exploration and distribution, and increasing competition in the market. The backbone of the non-associated gas exploration strategy relies on foreign consortiums exploring for onshore gas and condensate (natural gas liquids) in the Rub al-Khali, which officials hope will produce some 2 Bcf/d by 2011, although success has been limited.

Saudi Arabia has four upstream joint ventures in the Empty Quarter:

- South Rub al-Khali Company or SRAK (a venture of Saudi Aramco and Royal Dutch/Shell)
- Luksar Energy Limited (a venture of Saudi Aramco and Lukoil)
- Sino Saudi Gas Limited (a venture of Saudi Aramco and Sinopec)
- EniRepSa Gas Limited (a consortium of Saudi Aramco, Eni, and Repsol-YPF)

The consortia were required to drill 27 exploratory wells by the end of the first exploration period ending in 2009. To date, these ventures have not made significant commercial discoveries. SRAK's 4th unsuccessful well, Kidan-6, was reportedly among the most expensive onshore wells in industry history.

Pricing

In addition to facing domestic supply shortages, Saudi Arabia has also come under pressure internationally for its subsidized natural gas prices. Generally, the price for natural gas for industrial and petrochemical use is set by the ministry at \$0.75 MMBtu, some of the lowest in the Gulf. This low price was set when most of Saudi Arabia's gas production came from inexpensive associated gas, but is inconsistent with the much more expensive high-sulfur gas production coming from offshore fields expected to cost from \$3.50 - \$5.50 MMBtu. The low natural gas price is also a challenge to the foreign operators in the Kingdom looking to discover and exploit resources in the Empty Quarter.

Downstream Developments - Gas Processing

Saudi Arabia currently has seven gas processing plants with a total gas production capacity of approximately 9.3 Bcf/d, including 1 million bbl/d of natural gas liquids (NGLs) and approximately 2,700 tons of sulfur at facilities Berri, Shedgum, Uthmaniyah and Hawiyah. According to statements made by Saudi Aramco, the country is expanding processing capacity to 13 Bcf/d, with projects underway at Khursaniya, Hawiya, Ju'aymah, Yanbu', and Khurais.

Domestic Gas Pipelines

Domestic demand, particularly the delivery feedstock to petrochemical plants, has driven consistent expansion of the nearly 8.0 bcf/d Master Gas System (MGS), the domestic gas distribution network in Saudi Arabia first built in 1975. Prior to the MGS, all of Saudi Arabia's natural gas output was flared. The MGS feeds gas to the industrial cities including Yanbu' on the Red Sea and Jubail.

In order to feed the expanded gas processing facilities, several additions to the MGS are in the planning or construction phases. The largest pipeline to be built is the 132-mile conduit to the Rabigh complex and the existing Yanbu' NGL processing facility. Installation of four pipelines, totaling some 62-miles will connect Manifa to KGP and Ras az-Zour for gas processing and raw power production. This is part of a broader expansion of the existing gas transmission system in Saudi Arabia, reportedly to include the construction of around 1,200 miles of additional natural gas pipeline capacity (on top of 10,500 miles of oil, gas, and condensate, products, and natural gas liquid pipelines currently in operation).

Profile

Energy Overview

Proven Oil Reserves (January 1, 2009E)	264 billion barrels (includes half of Divided/"Neutral" Zone)
Total Petroleum Production – including the Neutral Zone (2008E)	10.8 million barrels per day (bbl/d), of which 9.3 million bbl/d was crude oil, 1.4 million bbl/d was natural gas liquids (NGLs), and 80,000 bbl/d was "other liquids" (including MTBE)
Oil Consumption (2008E)	2.4 million bbl/d
Domestic Crude Oil Refining Capacity (January 1, 2009E)	2.1 million bbl/d
Proven Natural Gas Reserves (January 1, 2009E)	258 trillion cubic feet (Tcf) (includes half of NZ)
Natural Gas Production/Consumption (2007E)	2.7 Tcf
Electricity Installed Capacity (2007E)	36.9 Gigawatts (all thermal)
Electricity Generation (2007E)	179 billion kilowatt-hours (Bkwh); 2008 182 Bkwh
Electricity Consumption (2007E)	165 billion kilowatt-hours (Bkwh)
Total Energy Production (2007E)	23.8 quadrillion Btu*

Total Energy Consumption (2007E)	7.4 quadrillion Btu*
Energy Intensity (2007E)	21,655 Btu/\$ 2005 PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2007E)	433.9 million metric tons
Per-Capita, Energy-Related Carbon Dioxide Emissions (2007E)	15.7 metric tons
Carbon Dioxide Intensity (2007E)	1.3 metric tons/thousand \$2005PPP

Oil and Gas Industry

Major Oil/Gas Terminals	Ras Tanura Facility (over 6 million bbl/d) Ras Tanura Port (2.5 million bbl/d), Ras al-Ju'aymah (3-3.6 million bbl/d capacity), Yanbu (over 6 million bbl/d capacity – of which 4.5 million bbl/d crude, remainder products/LPG), Jubail, Jiddah, Jizan Ras al-Khafji, Rabigh, Zuluf
Major Oil Fields	Abqaiq, Ghawar, Khursaniya, Qatif, Safaniya, Shaybah, Zuluf (in addition, Khurais is partially developed and being brought back online)
Major Pipelines (capacity – million bbl/d)	Domestic: Abqaiq-Yanbu Petroline (5.0), Abqaiq-Yanbu NGL line (0.3); International: Saudi Arabia-Bahrain (estimated 0.7) , Saudi Arabia-Iraq or IPS (1.6 -- closed since August 1990), TransArabia Tapline (0.5 -- closed since 1984), New Arabia: under construction, will replace pipeline to Bahrain
Major Refineries (capacity January 1, 2009E)	Saudi Aramco - Ras Tanura 550,000 bbl/d; Saudi Aramco - Rabigh 400,000 bbl/d; Saudi Aramco - Yanbu 235,000 bbl/d; Saudi Aramco - Riyadh, 120,000 bbl/d; Saudi Aramco - Jeddah 85,000 bbl/d; Saudi Aramco/Mobil - Yanbu 400,000 bbl/d; Saudi Aramco/Shell - al-Jubail 290,000 bbl/d; Mina Saud (Mothballed), Arabian Oil Company (Japan) - Ras al-Khafji (30,000 bbl/d – mothballed in 2005)

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power.

**GDP figures from Global Insight estimates based on purchasing power parity (PPP) exchange rates.

Links

EIA Links

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[Saudi Aramco Mobile Refinery Company \(SAMREF\)](#)
[Saudi Aramco Shell Refinery Company \(SASRF\)](#)
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